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RETURN TO WORK – METHODS FOR PROMOTING HEALTH AND PRODUCTIVITY IN EMPLOYEES ON SICKNESS ABSENCE

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Return to work – methods for promoting health and productivity in employees on sickness absence

THESIS FOR DOCTORAL DEGREE (Ph.D.)

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*To my parents, Ruth and Karl-Erik,
for your love, support and encouragement.*

ABSTRACT

Background

Sickness absence (SA) due to common mental disorders and musculoskeletal pain is highly prevalent worldwide and has increased markedly over the past decade. Mental and behavioral disorders account for more incapacity benefit claims than any other disorder. Evidence-based interventions such as cognitive behavioral therapy for depression and anxiety have proven to be effective treatments for these patient groups, however the effect on SA duration and return to work (RTW) is unclear. Overall, there is a lack of knowledge on how to treat patient in order to have satisfactory results for both symptoms and RTW.

Purpose and aims

The purpose of this doctoral project was to evaluate the effect of psychological interventions on SA and RTW. The first aim was to identify published randomized controlled trials and evaluate the effect on SA in a systematic review and meta-analysis. The second aim was to investigate the effects and cost-effectiveness of Acceptance and Commitment Therapy (ACT) and the Workplace Dialogue Intervention (WDI) both separately and combined compared with treatment as usual (TAU).

Methods

In study I, a systematic review and meta-analysis was conducted to evaluate the effect of psychological treatment on duration of SA and symptoms in patients on SA due to common mental disorders or musculoskeletal pain. In study II, patients (N = 352) were randomized to one of four groups, ACT, WDI, ACT+WDI, or TAU, and were followed up until one year after randomization regarding net SA days, work ability, level of function, satisfaction with life, and psychiatric symptoms. Study III was an economic evaluation of the same sample as in study II, consisting of a cost analysis and a cost-utility analysis from a health-care perspective and a limited societal perspective. In study IV, long-terms effects on outcome and economic evaluation were evaluated with a two-year time horizon.

Results

In study I, 30 studies matched inclusion criteria and was included in the analysis. The meta-analysis yielded a significant but small effect size in favor of psychological treatments regarding duration of SA. There were no significant effects for symptoms of anxiety or depression. The results from study II showed no significant differences between groups over time for net SA days or work ability. Diagnostic group moderated the results. Patients with exhaustion disorder had more SA days in ACT+WDI compared with TAU and depressed patients had more SA days in WDI compared with TAU. For symptoms of depression, anxiety and exhaustion disorder, there were significant interaction effects in favor of ACT and ACT+WDI from pre- to post measurement when compared with TAU. The economic evaluation in study II showed that all groups reported significant improvements in health-related quality of life (HRQoL), but there were no significant differences between groups in HRQoL or costs. ACT was deemed cost-effective from a health-care perspective and the

probability of cost-effectiveness for ACT+WDI compared with ACT was 50%. WDI and TAU were rejected due to less economic efficiency. In study IV, there were no differences between groups in terms of SA, work ability or symptoms of anxiety or depression. In the WDI group, participants with depression had more SA days compared to those with exhaustion disorder. The economic evaluation confirmed the results from the one-year follow-up.

Conclusions and further directions

Evidence-based psychological treatments such as CBT is effective for treating symptoms of common mental disorders but the effect on SA duration and RTW is unsatisfactory. There is a great need for further development of return to work interventions and more well-designed intervention trials. Generally, study quality was low which introduces further doubt in the interpretation of the results. There were overall few differences between ACT, WDI, and ACT+WDI compared with TAU. Effects in terms of cost-effectiveness were also small, probably due to lack of treatment effects. There are many areas in need of further development and evaluation in sickness absence research. Interventions needs to be more specific in terms of theory, mechanisms of change and tailored to maximize effects for different subgroups.

SAMMANFATTNING PÅ SVENSKA

Psykisk ohälsa och muskuloskeletal smärta är de vanligaste anledningarna till sjukskrivning både i Sverige och övriga västvärlden. Sjukskrivning till följd av psykisk ohälsa har också ökat kraftigt under det senaste decenniet. De vanligaste diagnoserna är depression, olika ångestsyndrom och stress-relaterad ohälsa eller utmattningssyndrom. Det finns evidensbaserad behandling, t ex kognitiv beteendeterapi (KBT), som har visat sig vara effektiv för att behandla symtom vid de här diagnoserna. Däremot är det oklart vilka effekter de här behandlingarna har när det gäller att återgå i arbete efter sjukskrivning. Överlag så finns det en stor kunskapsbrist för hur man bäst kan behandla patienter för att nå tillfredsställande resultat för både symtom på psykisk ohälsa och återgång i arbete.

Syfte

Syftet med den här avhandlingen var att utvärdera effekten av psykologiska behandlingsformer för sjukskrivning och återgång i arbete. I den första delstudien gjordes en systematisk översikt och meta-analys av publicerade studier av psykologiska behandlingar. Ett annat syfte var att utvärdera eventuella skillnader i effekt och kostnadseffektivitet mellan Acceptance and Commitment Therapy (ACT), Arbetsplatsdialog för arbetsåtergång (ADA), både var för sig och i kombination (ACT+ADA), och sedvanlig behandling.

Metod

Till studie I identifierades 30 studier i en systematisk översikt av litteraturen. Resultaten sammanställdes och analyserades i en meta-analys. Studierna II, III och IV baseras på en randomiserad kontrollerad studie med 352 deltagare. Deltagarna slumpades till en av fyra grupper: (1) ACT, (2) ADA, (3) ACT+ADA och (4) sedvanlig behandling. I studie II utvärderades effekten av interventionerna vad gäller sjukskrivning, arbetsförmåga och psykiatriska symtom upp till ett år efter randomisering. Studie III var en hälsoekonomisk utvärdering av interventionerna med syftet att jämföra kostnader samt undersöka kostnadseffektivitet i en kostnad-nytta-analys ut ett hälso-och sjukvårdsperspektiv och ett begränsat samhällsperspektiv. I studie IV utvärderades långtidseffekter av interventionerna, dvs. upp till två år efter randomisering.

Resultat

Meta-analysen i studie I visade att psykologisk behandling hade en signifikant bättre men mycket liten effekt på sjukskrivning. Psykologisk behandling var inte bättre än jämförelsegrupper vad gäller symptom på ångest och depression. I studie II framkom det att ingen av behandlingsgrupperna var bättre än sedvanlig behandling vad gäller sjukskrivning eller arbetsförmåga. Däremot fanns det en skillnad mellan diagnosgrupper på utfallet i de olika behandlingsgrupperna. Patienter med depression hade mer sjukskrivning i ADA-gruppen och patienter med utmattningssyndrom hade mer sjukskrivning i kombinationsgruppen (ACT+ADA). ACT och ACT+ADA visade på signifikant bättre resultat på symtom på psykisk ohälsa jämfört med sedvanlig behandling direkt efter avslutad behandling. Den hälsoekonomiska utvärderingen visade inte heller några större skillnader

mellan grupperna. ACT var det billigaste behandlingsalternativet men det fanns inga statistiskt signifikanta skillnader i kostnader mellan grupperna. ACT bedömdes som kostnadseffektivt ur ett hälso- och sjukvårdsperspektiv. Sannolikheten för att ACT+ADA skulle vara kostnadseffektivt jämfört med ACT var ca 50%. ADA och sedvanlig behandling exkluderades ur analysen pga. högre kostnader och lägre effekter. I stort sett så bekräftades resultaten från studie II och III i studie IV där resultaten följdes upp efter två år. Det fanns inga skillnader i utveckling över tid gällande sjukskrivning, arbetsförmåga eller symptom på ångest och depression. Den hälsoekonomiska utvärderingen vid tvåårsuppföljningen ledde till samma slutsatser som efter ett år.

Slutsatser och förslag för framtida forskning

Evidensbaserade psykologiska behandlingar som KBT är effektiva för behandling av symptom men effekten på sjukskrivning och återgång till arbete är inte tillfredsställande. Det finns ett stort behov av att utveckla interventioner för att underlätta återgång i arbete. Kvaliteten på interventionsstudier inom det här forskningsfältet behöver också bli bättre för att kunna dra säkra slutsatser. Skillnaderna mellan ACT, ADA, ACT+ADA och sedvanlig behandling var överlag små under uppföljningsperioden. Likaså var det små skillnader i termer av kostnader och kostnads-effektivitet. Det finns ett stort behov av metodutveckling och utvärdering inom många områden som berör sjukskrivningsprocessen. Interventioner för återgång i arbete behöver överlag bli specifika vad gäller teoretisk underbyggnad, vilka aktiva behandlingskomponenter som ska ingå samt att skillnader mellan subgrupper behöver utredas för att kunna anpassa interventioner bättre till specifika behov.

LIST OF SCIENTIFIC PAPERS

- I. Finnes, A., Enebrink, P., Ghaderi, A., Dahl, J., Nager, A., & Öst, Lars-Göran. Psychological treatments for return to work in individuals on sickness absence due to common mental disorders or musculoskeletal pain: a systematic review and meta-analysis of randomized controlled trials. *Submitted*.
- II. Finnes, A., Ghaderi, A., Dahl, J., Nager, A., & Enebrink, P. (2017). Randomized Controlled Trial of Acceptance and Commitment Therapy and a Workplace Intervention for Sickness Absence Due to Mental Disorders. *Journal of Occupational Health Psychology*. doi:10.1037/ocp0000097
- III. Finnes, A., Enebrink, P., Sampaio, F., Sorjonen, K., Dahl, J., Ghaderi, A., Nager, A., Feldman, I. (2017). Cost-Effectiveness of Acceptance and Commitment Therapy and a Workplace Intervention for Employees on Sickness Absence due to Mental Disorders. *Journal of Occupational and Environmental Medicine*. doi:10.1097/jom.0000000000001156
- IV. Finnes, A., Sorjonen, K., Ghaderi, A., Dahl, J., Nager, A., Enebrink, P. Efficacy and Cost-effectiveness of Acceptance and Commitment Therapy and a Work-place Intervention – Two-year follow-up of a randomized controlled trial. *Manuscript*.

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LIST OF ABBREVIATIONS

ACT	Acceptance and Commitment Therapy
CBT	Cognitive Behavior Therapy
CBA	Cost-Benefit Analysis
CEA	Cost-Effectiveness Analysis
CEAC	Cost Effectiveness Acceptability Curve
CUA	Cost-Utility Analysis
DSM	Diagnostic and Statistical Manual for Mental Disorders
ES	Effect Size
EQ-5D	EuroQol Group 5 Dimensions scale
GLMM	Generalized Linear Mixed Model
KEDS	Karolinska Exhaustion Disorder Scale
LMM	Linear Mixed Model
HADS	Hospital Anxiety and Depression Scale
HRQoL	Health Related Quality of Life
ICD	International statistical Classification of Diseases and related health problems
ICER	Incremental Cost Effectiveness Ratio
MSD	Musculoskeletal Disorder
QALY	Quality-Adjusted Life-Years
RCT	Randomized Controlled Trial
RTW	Return To Work
SA	Sickness Absence
SIA	Social Insurance Agency
SWLS	Satisfaction With Life Scale
TAU	Treatment As Usual
WAI	Work Ability Index
WDI	Workplace Dialogue Intervention
WSAS	Work and Social Adjustment Scale
WTP	Willingness To Pay

1 INTRODUCTION

The legal framework for sickness absence (SA) benefits in Sweden has its roots in local insurance societies that were formed in the workers' movement in the late 1800s. With the 1955 law (1947:1) of a mandatory public health insurance, a national SA insurance was introduced including SA benefits. Today, prescribing SA is a common practice in health care. However, the benefits of being on SA have been questioned during the past decade due to new knowledge of negative side effects for patients and escalating costs to society. Noteworthy in this debate, is that scientific studies are seldom referred. With this thesis I wish to examine the possibilities and challenges of providing evidence-based treatment for patients on SA.

1.1 Definitions

Generally speaking, SA can be defined as medically certified absence from work due to illness. There are a number of words used interchangeably to describe this phenomenon, e.g. sickness absence, sick leave, work disability, medical leave, and absenteeism. More specifically, SA is defined by its legislation and due to large differences between countries in various aspects regarding legislation of qualification requirements to receive compensation, a precise, global definition is not available. Rather, local legislation regarding who is entitled to compensation, how soon a medical certificate is required, how many qualifying days before compensation is paid, benefit levels, duration and taxation of benefits (Alexanderson & Norlund, 2004) affect the definition of SA. Hence, SA can only be defined on a general level and more precise definitions may only be used locally. A fundamental difference between welfare systems with bearing on the definition, is whether it is citizen-based (The Beveridge model), i.e. includes all citizens as is the case in the Scandinavian countries, Great Britain, Spain and New Zealand, or if it is employee-based (The Bismarckian model), i.e. includes workers and is not tax funded but rather depends on independent employers and employee organizations. The Bismarckian model, originating in Germany, is found in several European countries, Japan, the US and in Latin America. Another common distinction is between temporary SA arrangements and disability pension for longer lasting or even permanent illness. Temporary SA generally refers to periods between two and six weeks up to two years. Another consequence for the definition of SA due to differences in legislation concerns measurement. The meaning of common measures such as days to onset, SA frequency in terms of number of spells, absence duration and time to return to work (RTW), differs due to differences in legislation.

1.2 PREVALENCE

Musculoskeletal and mental health disorders are major reasons for work absenteeism and more permanent work disability in Western countries (Shiels, Gabbay, & Ford, 2004). In European countries mental disorders have exceeded the musculoskeletal disorders (MSD) in recent years when it comes to SA. In 2012/13 in the UK, MSD and stress, depression and anxiety were the most common reason in cases for work-related illness (The Health and

Safety Executive, 2013). In the Organization for Economic Cooperation and Development (OECD) countries, mental disorders and MSDs are the dominant diagnostic causes of SA and disability retirement (OECD, 2010). SA also varies among different groups in society and over time. The highest SA rates are found in the Scandinavian countries with percentage of working days lost consistently over 4 %. On the other end, many Eastern countries and Balkan countries have reported SA days below 1 % of working days lost. These differences are associated with the level of social protection and degree of job protection (Livanos & Zangelidis, 2010).

In Sweden, mental disorders and MSDs are also the most common causes for SA. In 2016, 53% of all SA spells for women and 40% for men were related to mental disorders. MSDs represented 19% of all SA spells for women and 24% for men (Försäkringskassan [Swedish Social Insurance Agency], 2017b). The SA benefit rate varies over time and the highest level of SA in Sweden was in 2002. From 2002 to 2010 SA benefit rates decreased but from 2010 until 2016, the rates increased again. Psychiatric disorders are increasingly dominant among new SA spells and for 2016, they accounted for 27% of all new spells which represents a 50% increase compared with 2013. Further, SA spells due to psychiatric disorders are longer compared with other diseases and thus constituted 44 of all ongoing spells in 2016. SA spells due to psychiatric disorders have a median duration of 75 days. The average SA spell including all diagnosis is 44 days long. The most common diagnosis within psychiatric disorders are adjustment disorders which constitutes about half of all new SA spells. The second most common diagnosis is depression. Together, adjustment disorders and depression accounts for 90% of all SA spells due to psychiatric disorders (Försäkringskassan [Swedish Social Insurance Agency], 2017a).

1.3 RISK FACTORS

Several risk factors for SA have been identified in a systematic review by Allebeck and Mastekaasa (2004). They conclude that although there is extensive information on associations between different socio-demographic factors and SA, few studies present rigorous scientific evidence on causal relationships between these factors and SA. There was limited scientific evidence only for divorce. Work-related factors included physically stressful work and low psychological control over the work situation. Overall, despite the extensive literature on working conditions and SA, there were major problems in drawing conclusions on causal relationships due to low study quality. Allebeck and Mastekaasa (2004) also found evidence that the design of the social insurance system influences the amount of SA. However, there were few studies and generally they were associated with substantial uncertainty.

Other risk factors for SA that have been discussed includes workplace bullying (Nielsen, Indregard, & Overland, 2016) and exposure to violence among women in the health and social care sector (Aagestad et al., 2014). For patients with subacute non-malignant pain, several risk factors were identified in a systematic review: multiple site pain, high pain severity, older age, baseline disability and longer pain duration (Valentin et al., 2016).

Long-term SA in itself has been shown to increase the risks of both disability pension and unemployment even when taking health status into account (Hultin, Lindholm, & Moller, 2012). However, quality of evidence is repeatedly found to be low or very low, or moderate at best, implying that confidence in results is limited and that large prospective prognostic factor studies are needed.

1.4 DISORDERS ASSOCIATED WITH SICKNESS ABSENCE

1.4.1 Common mental disorders

Mental disorders are increasingly important public health problems worldwide and it has been estimated that one out of five individuals will be affected over the course of one year (Steel et al., 2014). Combined prevalence figures for common mental disorders (CMD), most commonly involving mood, anxiety and substance use disorders, are often presented. For example, the prevalence of having any depressive, anxiety or alcohol-related problem has been estimated to 9 % in the European working population (Alonso et al., 2004). These disorders impair quality of life, functioning and work ability and affect both the general and employed populations (Alonso et al., 2011). For the purposes of this thesis, the Swedish version of the International Statistical Classification of Diseases and Related Health Problems - Tenth Revision (ICD-10-SE) (Socialstyrelsen [The National Board for Health and Welfare], 2011) and the Diagnostic and Statistical Manual for Mental Disorders – 4th edition (DSM IV) (American Psychiatric Association, 2000) have been used to define depression, anxiety disorders and stress-related ill-health.

1.4.1.1 Depression

Depression is a serious, commonly occurring and recurrent disorder linked with diminished role functioning, quality of life, medical morbidity and mortality across cultures (Kessler & Bromet, 2013) and has been identified as a leading cause of burden worldwide (Ferrari et al., 2013). Depression causes severe distress or impairment in psychological, physical and occupational areas of functioning. Diagnostic criteria include at least five of the following symptoms: depressed mood or irritable, decreased interest or pleasure, significant change in weight or appetite, sleeping disturbances, change in activity, fatigue or loss of energy, feelings of worthlessness or inappropriate guilt, diminished ability to think, concentration, and suicidality. The symptoms should have been present for at least two weeks and present nearly every day and cause significant impairment in function in social, occupational or other important area.

The prevalence of depression has been estimated to 21 % for life time (Kessler, Berglund, et al., 2005) and to 9.5% for twelve months (Kessler, Chiu, Demler, Merikangas, & Walters, 2005). However, prevalence estimates vary widely across countries, with prevalence generally higher in high-income countries compared with low- to middle-income countries (Kessler & Bromet, 2013).

1.4.1.2 Anxiety disorders

Anxiety disorders are characterized by excessive feelings of anxiety and fear and interferes with everyday functioning. Fear is the emotional response to a real or perceived threat and anxiety is anticipation of a future event. There are a number of anxiety disorders, including panic disorder, agoraphobia, social anxiety disorder, specific phobias and generalized anxiety disorder. These share common features such as persistent anxiety that is excessive or disproportionate to an actual threat. However, what is perceived as “threat”, differs between disorders.

The international prevalence of anxiety disorders varies greatly between published epidemiologic reports. Life time prevalence for anxiety has been estimated to 16.6% in one study (Somers, Goldner, Waraich, & Hsu, 2006) and 28.8% in another (Kessler, Berglund, et al., 2005) and twelve-months prevalence to 11.6% (Baxter, Scott, Vos, & Whiteford, 2013) and 18.5 % (Kessler, Chiu, et al., 2005). Prevalence estimates have been shown to vary substantially due to substantive factors such as gender, age, culture, conflict and economic status, and methodological factors such as cultural differences in responses to survey instruments (Baxter et al., 2013; Somers et al., 2006).

1.4.1.3 Stress-related disorders

Stress-related ill health has been defined in several ways. The concept of burnout originally described by Freudenberger (1974) as a feeling of exhaustion and fatigue in combination with different physical symptoms, have been further conceptualized by Maslach, Schaufeli, and Leiter (2001) as a syndrome of emotional exhaustion, cynism and depersonalization, mainly affecting highly motivated employees working in helping professions. Another definition from (Melamed, Kushnir, & Shirom, 1992) describe burnout in terms of physical fatigue, emotional exhaustion, and cognitive weariness resulting from prolonged stress exposure. The common factor in these definitions is the role of exhaustion as a key component but the conceptualization of burnout has moved away from being only work-related to include also private life stressors.

Attempts have been made to formulate burnout as a clinical diagnosis. For example, in the Netherlands, neurasthenia according to the ICD-10 criteria has been called clinical burnout by adding the condition that the symptoms should be work-related. In DSM-IV, adjustment disorder is defined as emotional or behavioral symptoms occurring within 3 months in relation to an identified stressor, reactions of marked distress, and significant impairment in daily functioning (American Psychiatric Association, 2000). The symptoms of adjustment disorder are limited to six months after the termination of the stressor and a number of subtypes are defined. In the 10th edition of the International Classification of Diseases (ICD-10), adjustment disorder is defined as a maladaptive reaction to an identified stressor, including significant life change or stressful event (World Health Organization, 1992). Adjustment disorder is one of the most used diagnoses for mental disorders in clinical practice (Maercker, Einsle, & Kollner, 2007; Strain & Friedman, 2011; Zelviene &

Kazlauskas, 2018), but also one of the diagnoses with least valid and reliable measures (Strain & Friedman, 2011), and has been heavily criticized for being ill-defined (Maercker et al., 2007). As a consequence of no established diagnostic standards, diagnostic algorithms are usually defined for each study and epidemiological data on prevalence of adjustment disorders is scarce and not reliable (Zelviene & Kazlauskas, 2018). A Swedish study indicated a prevalence rate of 9.2% for adjustment disorder among primary care patients (Sundquist, Ohlsson, Sundquist, & Kendler, 2017) and for the general population, available studies indicates a prevalence of 1-2% (Zelviene & Kazlauskas, 2018).

In Sweden, the concept of exhaustion disorder was proposed in 2005 to improve diagnostics for the growing body of patients that complained of symptoms emerging after long periods of stress. Exhaustion disorder was assigned the code F43.8 in ICD-10-SE, the Swedish version of ICD-10 (Socialstyrelsen [The National Board for Health and Welfare], 2011). Exhaustion disorder is characterized by physical and mental exhaustion during at least two weeks, reduced mental energy, at least four of the following symptoms on a daily basis during at least two weeks: impaired memory, reduced capacity to further stress, emotional instability, sleep disturbances, fatigue and physical weakness, and physical symptoms.

1.4.2 Musculoskeletal disorders

MSDs are injuries or pain in the musculoskeletal system, including muscles, tendons, the skeleton, cartilage, ligaments, and nerves as defined by the World Health Organization (WHO). Musculoskeletal pain presents as localized, regional or widespread pain and can be caused by a variety of circumstances. MSDs show an episodic pattern and in most cases the complaints improve spontaneously over time (Waddell, 1987), without medical interventions or prescription of SA.

MSDs are highly prevalent in the general population (Vos et al., 2012) and according to WHO, chronic pain is one of the most underestimated challenges for health care worldwide. The life-time prevalence for low back pain has been estimated to between 70-85% and annual prevalence ranges from 15% to 45% (Andersson, 1999). For neck pain, lifetime prevalence for adults has been estimated to 48.5% and to 37.2% in twelve months (Fejer, Kyvik, & Hartvigsen, 2006).

1.5 CONSEQUENCES OF SICKNESS ABSENCE FOR THE INDIVIDUAL

There is more research on the causes of SA and less on its consequences. Consequences of SA may be positive or negative, however reports of negative consequences are more common (Sieurin, Josephson, & Vingard, 2009). Some positive effects that have been reported includes reduced consumption of alcohol and less smoking as well as positive effects on lifestyle and relations to partner and children (Bryngelson, 2009).

The negative effects of SA include higher risk of future SA and disability pension (Hultin et al., 2012; Vingard, Alexanderson, & Norlund, 2004; Wallman et al., 2009). In a cross-

sectional study, a strong connection between length of SA and the amount of self-reported negative consequences was found indicating that the length of the sickness spell might be of more importance than the extent (Sieurin et al., 2009). Other negative consequences involving reduced career opportunities, personal finances, inactivity and isolation as well as suicide following SA have been described in the literature (Vingard et al., 2004). In a prospective cohort study (Virtanen et al., 2006), high rates of SA predicted job termination and unemployment among women in temporary public-sector jobs. High absence rates were not associated with job termination among men. However, secure employment served as a protective factor even when SA rates were high (Virtanen et al., 2006). Risk for long-term unemployment and negative influences on the private financial situation (Bryngelson, 2009; Sieurin et al., 2009) have also been reported as consequences of SA. In a Swedish study, inactivity and isolation resulting in greater pain, restlessness, stress, depression and a negative sick role were identified as consequences for women sick listed for more than two months or on disability pension. SA might also have a negative effect on possibilities and desire for social and family activities (Bryngelson, 2009). In a Danish register study, SA for more than three weeks was a risk factor for suicide in men also when adjusted for admission to a psychiatric clinic (Qin, Agerbo, Westergaard-Nielsen, Eriksson, & Mortensen, 2000). In a longitudinal study it was shown that previous SA influenced later perception of social support at the workplace. People with high levels of SA reported greater lack of social support at the workplace (Knapstad, Holmgren, Hensing, & Overland, 2014).

1.6 THE RETURN TO WORK PROCESS

Once on SA, the process of RTW has proven being complex and multifaceted, influenced by various domains involved in the RTW process. Loisel et al. (2005) have created an illustration of a work disability program for MSDs. The model can also serve as an illustration of domains involved in the RTW process i.e. personal system, healthcare system, workplace system, and legislative systems and insurance. The model illustrates the various social structures of the four domains and the corresponding representatives of each system. It has been successfully applied in practice for numerous disabilities although it was originally developed to orient case managers of low back disability (Loisel & Anema, 2013). The model illustrates the arena that the worker on SA is operating on. The worker is in the center surrounded by the four main influential systems of the work-limited situation. The personal system involves all social relationships of the person, the health care system and health care personnel, the workplace system includes the specific job position of the worker as well as the department, organization and external environment. Legislative and insurance systems also influence the worker with its local systems and involved actors. The overall cultural context is also represented in the model influencing the situation of the work-disabled individual (Loisel et al., 2005).

Loisel et al. (2001) points out a necessary paradigm shift adopting a disability prevention paradigm instead of the disease treatment paradigm in order to achieve effective RTW. This

paradigm shift implies that the health care provider, after ruling out severe disease, should adopt the work disability paradigm to find the best way to help the patient RTW. It also implies that involved stakeholders such as employers, representatives from workers compensation agencies and the health care system should facilitate an interorganizational dialogue. Although this model was originally developed for MSDs, it can also serve to identify each one's role in the work participation of people with mental disorders (Loisel & Anema, 2013).

Pomaki et al. (2010) have summarized five principles over three levels of RTW/stay at work interventions for people with mental disorders: On an Organizational level, interventions should consist of clear, detailed, and well-communicated organizational workplace mental health policies. On a Disability management practice-level, interventions should be guided by three principles: 1) RTW coordination and structured, planned, close communication between workers, employers, unions, healthcare providers, and other disability management stakeholders. 2) Application of systematic, structured and coordinated return to work practices, and 3) work accommodations should be an integral part of the return to work process and the context of their implementation determines their effectiveness. Lastly, on an individual-level, facilitation of access to evidence-based treatment should be arranged in order to reduce work absence (Pomaki et al., 2010).

1.7 THEORETICAL FRAMEWORK FOR THE RETURN TO WORK PROCESS

The lack of theoretical framework has been cited as a major challenge for research on occupational disability and RTW (Allebeck & Mastekaasa, 2004). Theories are important as a framework for observing, studying and interpreting in a more systematic way. In work-disability research, there are many different theories, stemming from different research approaches such as psychology, sociology, economy, political science and anthropology. This may be confusing and overwhelming for the researcher why De Rijk (2013) has developed a taxonomy of empirically studied work disability theories that organizes three different types of theories: (1) theories explaining how and why someone becomes work disabled, (2) theories explaining or predicting duration of work disability, and (3) theories understanding the RTW process. For the purposes of this overview, focus will be on theories relevant for this thesis, i.e., (2) theories that explain or predict duration of absence once the individual is on SA. These include the health-related approach, phase models, the work stress approach, and decisional theories.

1.7.1 Health-related approach

The health-related approach implies a relation between clinical measures, i.e. symptoms of illness or ill-health, and the length of the SA period. This relationship was demonstrated in a review by Krause, Frank, Dasinger, Sullivan, and Sinclair (2001). However, although these factors may be useful in predicting RTW outcome and identifying high risk groups, disability prevention strategies need to be informed by more modifiable risk factors and the effects of health on RTW is in need of a more defined theory (Krause et al., 2001).

1.7.2 Phase models

Phase models addresses the developmental and temporal aspects of the RTW process where the employee returns to work progressively. Therefore, interventions should be designed to stimulate stage-wise RTW. Three different phase models have been described. (1) The Stages towards return to work model (Selander, Marnetoft, Bergroth, & Ekholm, 2002) describes how medical care normally is the first measure taken followed by medical and non-medical vocational rehabilitation in a step-wise process toward either RTW or disability pension. (2) The Readiness for change model was originally developed for quitting smoking and describes the stages in the development of motivation for behavioral change. The stages are precontemplation, contemplation, preparation for action, and maintenance (Franché & Krause, 2002). (3) The Phase models for disability describe how the chronicity of pain and fatigue develops. These models recognize the developmental character of disability and distinguish between the onset of the symptoms and the formal report of the illness from the phases where disability develops. Psychosocial factors such as attention to the symptoms, avoiding activity and general decrease of the condition are important factors for the development of chronicity or not. There are different phase models for disability but they share the importance of matching occupational and clinical interventions to the appropriate phase of disability. Physical and injury factors are crucial in the acute phase. However, in the sub-acute and chronic phases, interventions should focus on psychosocial factors (Franché & Krause, 2002).

The Readiness for change model and the phase model have been combined in the Readiness for Return-to-work Model (Franché & Krause, 2002). The individual's social context and the individual himself determine the decisional balance between pros and cons of RTW, perceived self-efficacy regarding RTW and the change process, i.e. the process of recovery, rehabilitation and RTW. Theoretically, this model is useful in order to predict optimal timing for interventions based on an individual's readiness for RTW (Franché & Krause, 2002).

1.7.3 Work Stress Approach

The work stress approach is based on the Demand-Control-Support model, which is developed from the well-known Demand-Control model (Karasek, 1979). According to this theory, it is mainly the combination of low control and high demand, called high strain work, that has negative consequences for the health. In a study by Janssen et al. (2003) high job demands predicted earlier RTW after SA. The authors concluded that high job demands might serve as pressure for earlier RTW. Job control and support from the supervisor also reduced time to RTW. However, although job characteristics has proven to reduce duration of SA, the effect of increased support from the supervisor during the SA period is probably more effective than support in terms of job characteristics prior to the SA period (De Rijk, 2013). Therefore, this theory might serve better to explain reporting sick then explaining duration of SA.

1.7.4 Decisional theories

Decisional theories describe the process that lead to the decision of RTW that is supposed to occur after certain conditions are fulfilled. One model is the Attitude, social norm, and self-efficacy model. According to this model, the motivation for RTW along with absence of obstacles explains the decision of RTW. The motivation is described as having three components: the attitude regarding work, the perceived social norms within the employees' social context regarding RTW and the experienced self-efficacy regarding RTW (de Vries, Dijkstra, & Kuhlman, 1988). The theory has been tested and work motivation was correlated with actual RTW (De Rijk, Janssen, Van Lierop, Alexanderson, & Nijhuis, 2009). Another model that belongs to the decisional theories is focusing on subjective obstacles to RTW (Berglind & Gerner, 2002). According to this model, there are three factors that determine what an individual will choose to do: preference, perceived competence and opportunities. The views expressed by the respondents in an instrument based on these factors were shown to correlate with actual employment status two years later (Berglind & Gerner, 2002).

1.8 INTERVENTIONS TO REDUCE WORK DISABILITY IN WORKERS DUE TO MENTAL DISORDERS

1.8.1 Clinical interventions

Both psychotherapy and medicine (SSRI) are effective treatment options for depression and anxiety disorders (Bandelow, Seidler-Brandler, Becker, Wedekind, & Ruther, 2007; Butler, Chapman, Forman, & Beck, 2006; Cuijpers, van Straten, Warmerdam, & Andersson, 2009). According to a review by The Swedish Council on Technology Assessment in Health Care, Cognitive Behavior Therapy (CBT) has strong support for reduction of symptoms and regained work ability and social function (The Swedish Council on Technology Assessment in Health Care, 2004). However, they recognize the lack of resources in terms of experienced therapists that can deliver the intervention according to the treatment manuals. A Cochrane review on interventions to improve RTW in depressed people concluded that there is no support for any psychological intervention as standalone treatment or in combination with antidepressant medication in decreasing SA in depressed workers (Nieuwenhuijsen et al., 2008). Another Cochrane review investigated the effect of interventions that aimed at facilitating RTW for workers with acute or chronic adjustment disorders causing SA (Arends et al., 2012). Adjustment disorders were defined as acute significant emotional or behavioral problems in response to an identified stressor, as described in DSM-IV and ICD-10. Nine RCT's were included whereof eight reported the effect of ten psychological interventions and one on the effect of a combined intervention consisting of a psychological intervention and relaxation techniques. Five were based on CBT and the other five on problem solving therapy (PST). The results showed no evidence that CBT was effective with regard to RTW or SA. There was moderate-quality evidence that PST significantly enhanced partial RTW but not full RTW (Arends et al., 2012). Altogether, there is indisputable evidence of the effectiveness of CBT in the treatment of

CMDs. However, up to date traditional CBT protocols have not been shown effective in reducing SA.

Acceptance and Commitment Therapy (ACT) (Hayes, Strosahl, & Wilson, 2011), is part of the third wave of behavioral therapies based on mindfulness- and acceptance interventions and has attracted significant scientific interest during the last couple of decades (Smout, Hayes, Atkins, Klausen, & Duguid, 2012). The treatment objective in ACT is to improve functioning by increasing psychological flexibility defined as “the ability to notice and accept aversive and interfering thoughts, emotions, and bodily sensations without acting on them, and to facilitate behavior in accordance with personal values and long-term goals in the presence of such negative experiences” (Hayes, Luoma, Bond, Masuda, & Lillis, 2006). ACT cultivates mindfulness, acceptance and cognitive defusion as a means to increase psychological flexibility and promote behavioral change in line with personal values also in the presence of negative stimuli (Hayes et al., 2011). Reviews evaluating studies comparing ACT to waitlist control, placebo and TAU have reported moderate to large average effect sizes across a broad range of problems such as chronic pain, anxiety disorders, depression, work related stress, substance abuse, posttraumatic stress disorder (A-Tjak et al., 2015; McCracken & Vowles, 2014; Ost, 2008, 2014). ACT has to some extent been evaluated in relation to SA (Aasdahl et al., 2018; Dahl, Wilson, & Nilsson, 2004; Folke, Parling, & Melin, 2012; Lytsy, Carlsson, & Anderzen, 2017). In the RCT by Dahl and colleagues (2004), a decrease in SA due to pain and stress problems was found in the ACT group compared to the group receiving treatment as usual (TAU).

1.8.2 Workplace Interventions

Workplace interventions include interventions that are closely linked to the workplace and might include either work adaptations or involvement of stakeholders from the workplace (Loisel & Anema, 2013). Workplace interventions might include workplace and equipment design such as adapting furniture, tools, or other materials needed to perform the work task. Other examples are changes in work organization i.e. changes in work schedules or task, training or communication processes between co-workers. Changes can also be made in the work environment concerning noise, lighting etc. Intervening in the work environment is a relatively new approach to work disability prevention and RTW interventions. This might represent a shift from disease prevention and treatment mainly focusing on symptom reduction, to disability prevention and management, focusing mainly on RTW (Loisel & Anema, 2013).

Many studies in SA research have been carried out involving “graded activity” which is based on an operant conditioning behavioral approach (Staal et al., 2008). According to the theory of operant conditioning, future occurrence of healthy behavior tends to increase as a result of graded activity and positive reinforcement. As applied to back pain, graded activity in combination with physical exercise might result in future occurrence of healthy behavior in contrast to inactive pain behavior (Staal et al., 2008). In a review of RCTs that evaluated active interventions that at least in some part took place at the workplace or at the

initiative of the employer graded activity showed moderate evidence in reduced SA (Odeen et al., 2013).

A systematic Cochrane review was published in 2009 and included six RCTs that evaluated workplace interventions (van Oostrom et al., 2009). The results showed that there was moderate-quality evidence for workplace interventions to reduce SA among workers with MSDs in comparison to usual care. However, workplace interventions were not effective in improving health outcomes. This result might be expected as workplace interventions aim to reduce barriers to RTW and not to improve symptoms of ill health in themselves (van Oostrom et al., 2009). Due to a lack of studies that includes interventions for people with mental disorders, there is no evidence that workplace interventions are effective for this population.

In Sweden, Karlsson and colleagues have developed a workplace intervention consisting of a series of meetings with the aim of reducing job-person mismatch by initiating a dialogue between the patient and the supervisor in order to find solutions to facilitate RTW (Karlsson et al., 2010). It was evaluated in a study with patients being treated for burnout, i.e. diagnosis within the F43 category (ICD-10). The results showed a more favorable RTW in the intervention group compared to care as usual (Karlsson et al., 2010). These results were stable 30 months after conclusion, but only in the younger half of the study sample (Karlsson, Jonsson, & Osterberg, 2014).

1.8.3 Combining clinical interventions with workplace interventions

Clinical interventions have proven to be effective in symptomatic improvement and workplace interventions seems promising regarding decreasing SA and facilitating RTW. Several attempts have been made in combining these two approaches. A review of the literature on workplace interventions showed that there is moderate quality evidence that adding a work-directed intervention to a clinical intervention can reduce the number of days on SA in depressed workers (Nieuwenhuijsen et al., 2008). In an RCT from the Netherlands two interventions, both based on CBT, were compared (Blonk, Brenninkmeijer, Lagerveld, & Houtman, 2006). Psychotherapists conducted one treatment according to a traditional CBT protocol, while so called “labor experts” delivered the other which consisted of a brief CBT-derived intervention in combination with both individual-focused and workplace interventions. The workplace intervention focused strongly on graded activity. In this case, when the workers were absent due to mental ill-health, graded activity signified partial work resumption in order to enable full work resumption. The results showed that partial work resumption occurred 17 days earlier in the combined intervention in comparison to the CBT condition. The difference for full RTW was approximately 200 days (Blonk et al., 2006). Lagerveld, Blonk, Brenninkmeijer, and Schaufeli (2010) evaluated a similar design where CBT was compared to work-focused CBT that incorporated work aspects early in the treatment according to principles of graded activity (Lagerveld, Blonk, Brenninkmeijer, Wijngaards-de Meij, & Schaufeli, 2012). The results showed significant effects regarding

duration of the current SA spell. Partial RTW occurred 12 days earlier and full RTW 65 days earlier compared to CBT.

Summing up, traditional clinical interventions such as CBT and or medicine are effective in terms of treating symptomology but so far there is no evidence of effectiveness in terms of duration of SA or RTW. Workplace interventions might be effective for RTW, as some evidence exists in patients on SA due to MSDs. However, workplace interventions do not provide the effects on symptoms as clinical interventions do. A promising approach therefore seems to be the combination of a clinical intervention such as CBT and a workplace intervention in order to meet the need of clinical improvement as well as RTW.

1.9 HEALTH ECONOMIC EVALUATIONS IN OCCUPATIONAL HEALTH

Health economics serves the purpose of informing decision makers on how to maximize the utility of public resources. The dilemma is how to allocate resources both effectively and in a way that is fair to the inhabitants of the society. Rules for decision-making to help allocate health resources and set priorities in health and health care and principles to base economic evaluation are central in this discussion. Health economics is a branch of economics which evaluates efficiency, effectiveness, value and behavior in the production and consumption of health and health care and can provide decision-makers with important data on how to make the most out of limited resources.

Health economic evaluations belong to normative economics which is distinguished from positive economics. Normative economics reflects value judgments which implies that recommendations are based on an ethical principle or value of what the outcome of the economy or public policy “ought to be”. Valuing health in money terms raises ethical questions and there are different schools within normative economics on how to address these questions. Two main approaches are welfarism and extra-welfarism. Although there is no absolute consensus on the differences between these two approaches (Brouwer, Culyer, van Exel, & Rutten, 2008), there are important differences in basic assumptions.

Welfarism focuses on the maximization of the overall sum of individual utility. Utility relates precisely to the idea of individual satisfaction derived from a given service or good. The welfarist is guided by the Pareto criterion, the idea that the resources should be allocated in a way to maximize the overall sum of individual utilities. That means that if the gain of a change is larger for person A than the loss for person B, and person A can compensate, at least in theory, person B for his loss, the overall welfare gain for the persons A and B together justifies the change. Further, the welfarist equates the value of health with the value of any other goods or service and sees no problem with changing health care for any other service with the same monetary value.

Extra-welfarist economics more specifically aim at maximizing health gain and may reflect both individual and societal preferences. In this respect, the word “extra” means to provide this expansion from the sole concept of utility to health itself. This other paradigm moves away from the welfarist perspective of maximizing utility when health is given a unique

position in relation to the possibility of living life to its full extent compared to other goods and services. Further, the extra-welfarist may ask the affected individual, but also collect data from an expert or a representative sample of the general public or an authoritative decision-maker thus reflecting a societal preference. Consequently, extra-welfarist economists assume that the role of health services is to increase the overall health of society.

Based on these theoretical approaches, four kinds of economic evaluations are distinguished. The simplest form of economic analysis is the cost-minimization analysis. Only costs are considered across alternatives, assuming that the consequences are similar. The optimal choice is the alternative that can be provided to the lowest cost. However, a full economic evaluation would explicitly consider the relative consequences of the alternatives and compare them with the relative costs. There are three main forms of full economic evaluation techniques: cost-benefit analysis (CBA), cost-effectiveness analysis (CEA), and cost-utility analysis (CUA). The difference between them relate to the value judgments implied in following each approach and how appropriate they are in relation to the question being asked (Drummond, Schulpher, Claxton, Stoddart, & Torrance, 2015).

CBA identifies choices that increase welfare from a utilitarian perspective, thus both costs and valuation of consequences are measured in monetary terms. The results of such analysis might be stated either in the form of a ratio of costs to benefits, or a simple sum representing the net benefit of one program over another. The result is judged against individuals' willingness to pay (WTP), quite like any market transaction where the value of a good is expressed in terms of WTP for that good. In line with the welfarist approach, what goes into that valuation is up to each individual, independent on how informed the individual is of the attributes and benefits of the intervention in question.

CEA and CUA both stem from the extra-welfarist approach, thus measuring outcome in terms of health. In a CEA, mutually exclusive alternatives are compared on the basis of the ratio of their costs and a single quantified but not monetized measure, such as cost per life saved. Programs that cost less per life saved are more efficient than other programs. Typically, results are expressed as incremental cost-effectiveness ratio (ICER) reflecting additional cost of an intervention compared with the next best alternative per unit of effect gained. ICERs are often graphically illustrated on cost-effectiveness planes in which incremental effects are plotted on the x axis and incremental costs on the y axis.

CUA also relates costs to a single benefit measure, but the benefit measure is a construct made up of several (usually two) benefit categories, reflecting both quantity and quality. For example, the benefit measure may be quality-adjusted life-years (QALY), which combines both the number of additional years of life and the quality of life during those years. Programs are compared on the basis of cost per QALY. As CUA measures both quantity and quality of impacts, it comes a step closer to CBA than CEA.

A systematic review on worksite mental health interventions (Hamberg-van Reenen, Proper, & van den Berg, 2012) showed that there are few economic evaluations on interventions aiming at prevention or treatment of CMDs or for workers on SA due to CMDs. There were four studies aiming at prevention and all had CBA design and one study also provided a CUA. All studies found potentially favorable financial return, however the results were uncertain due to insufficient methodological quality. There were six studies identified on RTW interventions which were either of CBA, CEA or CUA design. Five of these found favorable outcomes of RTW interventions. However, again, deficiencies in methodological quality made the results unclear. The three studies that were of high quality did not prove cost-effectiveness of the worksite mental health programs evaluated. Due to methodological problems, the authors tentatively draw the conclusion that worksite interventions to prevent or treat mental health problems might be cost-effective, but for RTW interventions, no cost benefit could be established (Hamberg-van Reenen et al., 2012).

1.10 METHODOLOGICAL CHALLENGES IN SICKNESS ABSENCE RESEARCH

SA is a fairly new and so far, undeveloped research area. During the last decade the field has gained increased attention and studies have shown that SA is a multifactor phenomenon that are influenced by a broad variety of risk factors (Alexanderson & Norlund, 2004; Loisel & Anema, 2013).

Various types of measures are used in SA research providing the advantage for different types of analyses that might highlight different dimensions of the SA process (Hensing, 2004). SA has been measured e.g. as number or duration of spells, different levels (full time/part time), calendar days or work days to RTW, compensated days hours of absence from work, recurrence of SA etc. (Hensing, 2004). The obvious disadvantage with various types of measures is the difficulties to compare different studies. Another such example is the use of different types of data measuring SA. Self-reported data and data from SA registers are common measures. However, self-reported data has been questioned due to recollection bias and register data is therefore recommended as an outcome measure (van Poppel, de Vet, Koes, Smid, & Bouter, 2002). Another aspect is lack of coherent definitions and constructs. Long-term and short-term SA e.g. is defined in different time spans across studies. The lack of a coherent set of measures and terminology complicates the general overview of the research field (Alexanderson & Norlund, 2004).

Other challenges with regard to measuring SA are the different systems and regulations of SA benefits in different countries. There are different regulations in a wide range of requirements to receive compensation for SA. The requirement of sickness certificates e.g. ranges from none in the Netherlands, from the first day in Finland to the eighth day in England and Sweden (Alexanderson & Norlund, 2004). In order to qualify for SA compensation some countries require employment during a specific period and/or paid fees whereas in some countries no qualifications are required and all citizens are entitled to benefits (Alexanderson & Norlund, 2004).

2 AIMS OF THE THESIS

The objective of this doctoral project was to evaluate methods that aims at facilitating RTW for individuals on SA due to common mental disorders and musculoskeletal pain. The specific aims in the respective studies are described below:

2.1 STUDY I

The aims of this systematic review and meta-analysis were (1) to examine randomized controlled trials for the effectiveness of psychological interventions in reducing SA in patients on SA due to mental disorders or musculoskeletal pain compared to a waitlist control group, usual care or another clinical intervention, (2) evaluate possible differences in effectiveness of these interventions, and (3) investigate moderating factors on RTW such as background variables and treatment specific variables.

2.2 STUDY II

The first aim of study II was to explore the effects of Acceptance and Commitment Therapy (ACT), a workplace intervention aiming at improving worker-supervisor communication - the Workplace Dialogue Intervention (WDI), and ACT and WDI in combination, for SA and work ability. The secondary aim was to explore the intervention effects on general functioning, mental health (anxiety, depression, adjustment disorder), and treatment satisfaction. The hypothesis was that the combination of ACT and WDI would yield improvements in both SA and mental health problems whereas the stand-alone WDI might only affect work-related outcomes and stand-alone ACT mainly influences health outcome.

2.3 STUDY III

The aim of study III was to evaluate the cost-effectiveness of an Acceptance and Commitment Therapy (ACT) intervention, a workplace dialogue intervention (WDI), a combination of ACT and WDI, and Treatment As Usual (TAU). The target group was employees on SA due to a common mental disorder. The cost-effectiveness analyses were performed from two perspectives: a health care perspective and a limited societal perspective including welfare benefits.

2.4 STUDY IV

For study IV, the aim was to examine the long-term effects of the interventions that were employed in study II and III. The primary outcome was time on SA, net SA days. Secondary outcomes were self-assessed work ability and symptoms of depression and anxiety. Third, cost-effectiveness during 21 months following the interventions was evaluated from a health care perspective and a limited societal perspective.

3 SUMMARY OF THE STUDIES INCLUDED IN THE THESIS

An overview of the methodological approaches in the different sub studies within this doctoral project is provided in Table 1.

Table 1: Design, data collection, statistical analysis and assessments for the studies included in the thesis.

n	Study 1 4024	Study 2 352	Study 3 352	Study 4 264
Study design				
RCT		*	*	*
Systematic review and meta-analysis	*			
Data collection				
Semi-structured diagnostic interview		*		
Questionnaires		*	*	*
Register data		*	*	*
Systematic literature search and data extraction	*			
Statistical analyses				
Meta-analysis	*			
Chi square test		*		
Fisher's exact test		*		
One-way ANOVA		*		
Little's MCAR test		*		
Analysis of internal consistency (Cronbach's alpha)		*		
Analysis of differences between groups (t-tests)		*		*
Linear mixed effects modelling (LMM)		*		*
Generalized mixed effects modeling (GLMM)		*		*
Effect size calculations		*		*
Analysis of reliable clinical change		*		
Multiple imputation			*	*
Nonparametric boot-strapping			*	*
Latent growth modeling			*	*
Cost-utility analysis			*	*
Assessments				
Register data on SA		*	*	*
Work Ability Index (WAI)		*		*
Work and Social Adjustment Scale (WSAS)		*		
Satisfaction With Life Scale (SWLS)		*		
Karolinska Exhaustion Disorder Scale (KEDS)		*		
Hospital Anxiety and Depression Scale (HADS)		*		*
Health Related Quality of Life (EQ-5D)			*	*
Study notes on costs			*	*
Cost data from data bases			*	*
Treatment satisfaction		*		
Therapist adherence and competence		*		

3.1 STUDY I: SYSTEMATIC REVIEW AND META-ANALYSIS

3.1.1 Methods

The inclusion criteria for this study were (1) the population targeted was studies with participants of working age (18-65 years) on SA at the time for inclusion due to common mental disorders or musculoskeletal pain, (2) at least one of the interventions consisted of psychological treatment, (3) all kinds of control groups were accepted, (4) the outcomes were measures of absenteeism, SA or time to RTW, and (5) the study design was a randomized controlled trial and published in an English language journal.

The primary outcomes were data on SA or RTW at post and follow-up divided in continuous and dichotomous datasets. Moderator variables were also collected from each study. Secondary outcomes were psychiatric symptoms.

The main analysis was between-group effects for all included studies compared to all control groups. Subgroup analyses were also conducted based on different categories of control groups: another psychological treatment, non-psychological treatment and TAU. The heterogeneity of the ES's was calculated based on the Q-statistic (heterogeneity in ESs beyond random error) and the I-squared statistic (the percentage of the observed variance that shows actual differences in ESs between studies). Moderator analyses of continuous variables on which at least 75 % of the studies provided information, were carried out with the meta-regression module in CMA (fixed effects model). For categorical variables, subgroup analysis using the mixed effects model was applied to assess moderation.

3.1.2 Results

The systematic searches resulted in 3800 records of which 30 trials met all review criteria and were included in the meta-analysis. The total number of participants was 4024 and seven countries were represented (Denmark [n = 2], Germany [n = 1], Netherlands [n = 13], Norway [n = 4], Spain [n = 1], Sweden [n = 7], USA [n = 2]). The average score for quality ratings using the Öst psychotherapy outcome study methodology rating scale (Ost, 2008) was 17.0 (SD=3.6) with a range between 11 and 23.

The overall ES was small ($g = 0.16$) but significantly different from zero (95% CI: 0.04-0.27). For categorical outcomes, the ES was also small (OR = 1.43), and significantly different from zero. There were also small but significant effect sizes when compared only with treatment as usual but not when compared to other psychological or non-psychological control conditions. There were no significant effects for the secondary outcome regarding psychiatric symptoms. There was no indication of publication bias for continuous outcomes but for dichotomous outcomes, Egger's regression intercept yielded a significant t-value ($t = 2.290$; $p = 0.032$) and Duval and Tweedie's trim-and-fill method suggested that 8 studies should be trimmed, indicating some risk of publication bias. There were significant effects for various moderator variables. For continuous measures, shorter treatments, higher methodology score, and adding booster sessions was associated with higher ESs. For

dichotomous outcomes, less attrition, longer treatments, not adding booster sessions, and having a work focus was associated with higher ESs. Further, therapist profession, setting, and in which country the studies were conducted moderated the dichotomous outcomes.

3.1.3 Discussion

The results showed a small but significant effect on SA in favor of psychological treatments compared to TAU. For partial and full RTW (dichotomous data), there was also a small but significant effect in favor of psychological treatments. Previous meta-analyses have not been unanimous but have pointed in different directions, possibly due to lack of power because of low numbers of included studies. Despite higher power in this meta-analysis, the effect sizes found are not larger than those found in previously (Arends et al., 2012; Cochrane et al., 2017; Doki, Sasahara, & Matsuzaki, 2014; Meijer, Sluiter, & Frings-Dresen, 2005; Nieuwenhuijsen et al., 2014; Nigatu et al., 2016; Salomonsson, Hedman-Lagerlof, & Ost, 2018). It should be noted that most trials did not specifically target RTW which can be one explanation for the small ESs. Rather, primary outcome measures were most often symptoms. There were contradictory results between continuous and dichotomous outcome measures in several moderator analyses where results pointed in different directions, e.g. treatment duration and adding booster sessions. There were also other significant moderators but for none of the moderator variables were there significant results for both continuous and dichotomous outcomes pointing in the same direction. Further, the analyses of publication bias also differed between continuous and dichotomous variables. These inconsistencies in results introduces uncertainty in the interpretation of the results, however, due the loss of information when dichotomizing data, we attribute more weight to the analyses on continuous measures.

There were considerable methodological weaknesses in the included trials. This was particularly apparent for procedures related to integrity in delivering the interventions and measurement procedures. The methodological weaknesses contribute to an overall difficulty of drawing firm conclusions on the effectiveness of psychological treatments in this field.

3.2 STUDY II: ONE-YEAR FOLLOW-UP

Studies II, III, and IV are based on the SAFARI Stockholm study. SAFARI is an acronym in Swedish (SAMordnad Forskning kring ARbetslivsinriktade RehabiliteringsInsatser) which translates to coordinated research on work-oriented rehabilitation interventions. The aim of this collaboration was to increase knowledge on RTW interventions and allow for comparison between trials by coordinating measurements in three separate studies in three county councils (Stockholm, Västra Götalands Regionen, and Västmanland). Studies II, III, and IV were based on data collected within the trial conducted in Stockholm.

3.2.1 Context and setting

The SAFARI Stockholm study was carried out in collaboration between the Stockholm county council and Centre for Psychiatric Research (CPF) between the years 2012 and

2016. The trial was conducted in an academic setting where a temporary clinic was set up and all treatment personnel were selected and employed for the purposes of this study only.

3.2.2 Design and inclusion of participants

The trial design was an RCT with four conditions: Acceptance and Commitment Therapy (ACT), Workplace Dialogue Intervention (WDI), ACT and WDI in combination, and Treatment As Usual (TAU). There were 352 participants included in the trial and randomly allocated to one of the four conditions. Inclusion criteria for this trial were: (1) in working age (18-60), (2) a current employment status of at least 50% (working at least 20 hours per week) (3) a current SA status between 25-100% for the past 1-12 months (4) fulfilling diagnostic criteria of an anxiety disorder, depression, or stress-related ill-health as defined by the diagnostic criteria for exhaustion disorder in ICD-10-SE, diagnostic groups F32, F33, F43.8). Comorbidity was allowed as long as they did not include exclusion criteria. Exclusion criteria included: (1) active suicide ideation, (2) severe depression, history of bipolar disorder or psychosis, substance abuse or dependence, (3) unemployment or self-employment, and (4) insufficient comprehension of the Swedish language.

The first step in the recruitment process was via collaboration with the Social insurance agency (SIA) in Stockholm. The SIA sent invitations to everybody that qualified for insurance benefits during the recruitment period due to common mental disorders as defined in this study. Participants were recruited from the Stockholm county allowing for participants from all kinds of socioeconomic backgrounds to participate. Registers were scanned for age, employment status, approved sickness benefit status, and diagnostic code. Recipients were asked to send back a signed consensus form in order to apply for inclusion in the study. An alternative way of application for the study was by advertisements in the press or the home page that was set up for the study. Applicants either called or sent a message via the homepage to apply for the study. The second step of the recruitment process consisted of a screening interview over phone. Inclusion and exclusion criteria were scrutinized for each potential participant and in case of a positive screening, a meeting was booked for the third and final step in the recruitment process which consisted of a face-to-face clinical and diagnostic interview.

3.2.3 Interventions

The intervention period was three months for all groups. During this period, participants in ACT, WDI, and ACT+WDI were informed not to participate in any concurrent therapy.

3.2.3.1 Acceptance and Commitment Therapy (ACT)

The ACT-protocol used in this study was created based on experiences from a previous trial with ACT for women on long-term SA (Lytsy et al., 2017). The protocol consisted of six sessions, conducted during a period of maximum three months. All ACT-processes: cognitive defusion, acceptance, present moment skills, self as context, values engagement and committee action, were represented in the protocol. The overall aim was to do active

work within all processes during all six sessions. However, there was a more articulated focus on helping the patient to become aware of avoidance patterns during the first three sessions. The purpose of this was to facilitate work on values clarification and values engagement by first acquiring skills of defusion and unwillingness to have and hold inner experiences. Patients learned to relate to thought and feeling without getting caught in them and distinguish between helpful and not helpful behaviors. The second part of the intervention focused on identifying personal values and increasing behaviors in line with these. This implies also distinguishing between rule-governed behaviors and avoidant behaviors from freely chosen behaviors that are driven by positive reinforcement. The final session aimed at summarizing the work that had been done during the intervention and making a plan for further behavior changes that the participant wished to accomplish.

All psychologists conducting ACT were psychologists with prior experience from clinical work based on ACT. Training in the manual used in the trial was given during a two-day workshop and supervision by a peer-reviewed ACT trainer was given on a weekly basis. All ACT sessions were video-taped to allow for checks on therapist adherence and competency.

3.2.3.2 Workplace Dialogue Intervention (WDI)

The WDI protocol was a modified version of the original WDI as assessed by Karlson et al. (2010). It consisted of three meetings aiming at improving and facilitation worker-supervisor dialogue on RTW-relevant processes. The first meeting was the participant-interview consisting of six open questions regarding what the causes of the SA were and what could facilitate the process of SA. The second meeting was with the supervisor at the work-place. The same questions were discussed from the supervisors' point of view. The third meeting, the convergence dialogue meeting, was also held at the workplace and included the participant, the supervisor and the WDI therapist. The aim of this meeting was to generate constructive worker-supervisor dialogue between the participant and the supervisor and to agree on a plan of action for RTW. The WDI therapist was responsible for summing up the plan of action and sent it to the participant. There was no follow-up where the WDI therapist participated included in the protocol, however, the participant and supervisor were encouraged to follow-up on the plan and other steps taken.

3.2.4 Assessment

Assessments included in study II are described below. Table 1 shows what measures are included in each study respectively.

3.2.4.1 Sickness absence

SA was assessed with data from the Swedish social insurance agency (SIA). SIA reimburses medically certified SA from day 15 in a SA spell. Data was ordered from the register MIDAS at the SIA and consisted of panel data, that is, number of days that are reimbursed per calendar month during the study period for a specific individual. This

qualifies as high-quality data and is retrieved blindly by an administrator at SIA. Data was adjusted for the day of the month that randomization took place and organized in panels representing three months each (trimesters). Net days of SA was used, i.e., part-time SA was added up to full-day equivalents. Pre-assessment consisted of net days of SA the three months prior to randomization and follow-up assessments from randomization and forward in three-months intervals.

3.2.4.2 Work ability

Work ability was assessed with the Work ability index (WAI) which was developed by the Finnish Institute of Occupational Health (Tuomi, Ilmarinen, Martikainen, Aalto, & Klockars, 1997). The WAI questionnaire covers seven dimensions related to work ability: current work ability compared with lifetime best, work ability in relation to the demands of the job, number of diagnosed illnesses or limiting conditions, amount of SA during the last year, own prognosis of work ability in 2 years' time. The score is weighted depending upon mental and/or physical demands of the job and the range is between 7 to 49. The final work ability score is categorized in one of the following categories: bad (7-27 points), moderate (20-36 points), good (37-43 points), and very good (44-49 points). Subjective stress factors and stress symptoms are strongly related to the index (Kloimüller, Karazman, Geissler, Karazman-Morawetz, & Haupt, 2000). It is highly dependent on age (Pohjonen, 2001) and predicts long-term SA, but not "no SA" (Kujala et al., 2006). Reliability is adequate, internal validity is acceptable and there is a satisfactory relationship between the subjective result of the index and the results of more objective measurements (Eskelinen, Kohvakka, Merisalo, Hurri, & Wagar, 1991; Nygard, Eskelinen, Suvanto, Tuomi, & Ilmarinen, 1991; Radkiewicz & Widderszal-Bazyl, 2005).

3.2.4.3 Work and social adjustment scale

Social functioning was assessed with the work and social adjustment scale (WSAS). It was first developed by Marks (1986) aiming at complementing symptom-oriented measures with a rating of patients' perceived functional impairments. Self-perceived functioning is rated in relation to five life domains: work, home chores, social leisure activities, other leisure activities, and ability to create and maintain close relations to others. Later psychometric evaluations have shown that WSAS measures a distinct social functioning factor, has high internal reliability, and is sensitive to treatment effects (Mundt, Marks, Shear, & Greist, 2002; Zahra et al., 2014).

3.2.4.4 Satisfaction with life

The satisfaction with life scale (SWLS) consists of five items designed to measure global cognitive judgments of satisfaction of one's life (Diener, Emmons, Larsen, & Griffin, 1985). The SWLS is one of the most used and validated instruments in well-being research and has been shown to have acceptable test-retest reliability, is sensitive to life events, and often serves as a criterion measure for new scales (Kobau, Snizek, Zack, Lucas, & Burns, 2010; Pavot, Diener, Colvin, & Sandvik, 1991).

3.2.4.5 *Exhaustion disorder*

The level of stress symptoms was assessed with the Karolinska Exhaustion Disorder Scale (KEDS) (Beser et al., 2014). This 9-item questionnaire (rated 0-6) with a scale range of 0-54, was developed based on the diagnosis of exhaustion disorder. The items in KEDS covers different symptoms of exhaustion: ability to concentrate, memory, physical stamina, mental stamina, recovery, sleep, hypersensitivity to sensory impressions, experience of demands, and irritation and anger. A cut-of score of 19 has been shown to discriminate between healthy subjects and patients with exhaustion and confirmatory factor analysis supports the idea of exhaustion disorder as a separate disorder (Beser et al., 2014; Persson, Osterberg, Viborg, Jonsson, & Tenenbaum, 2017).

3.2.4.6 *Anxiety and depression*

The Hospital Anxiety and Depression Scale (HADS) (Zigmond & Snaith, 1983) was used to assess symptoms of anxiety and depression. The questionnaire consists of 14 items (rated 0-3), seven relating to anxiety and seven to depression. The scale was originally developed to avoid reliance on aspects of conditions that are also common somatic symptoms of illness such as fatigue, insomnia or hypersomnia. In a review of the literature of the validity of the HADS, it was found to perform well in assessing the symptom severity and caseness for anxiety disorders and depression in both somatic, psychiatric and primary care patients (Bjelland, Dahl, Haug, & Neckelmann, 2002). Also, Bjelland and colleagues (2002) identified a cut-off point of 8 for anxiety and depression respectively and found that sensitivity and specificity for both subscales was approximately .80.

3.2.4.7 *Treatment satisfaction*

Six questions were used to assess treatment satisfaction in this study. We asked the participants whether the treatment was considered helpful concerning mental health problems and RTW respectively, if the treatment fulfilled their needs, if it was appropriate concerning their problems, if they would recommend it to a friend, and how satisfied the participant was with having participated in the study. Answers were given on a Likert scale (1-7) where degree of agreement was rated from “Not at all” to “Completely”.

3.2.5 **Treatment adherence and therapist competence**

For the ACT intervention, a checklist used in previous trial (Hayes-Skelton, Roemer, & Orsillo, 2013) was used to assess adherence to the treatment protocol and therapist competence. This checklist consists of nine allowed strategies components (e.g., directing the client to notice internal experiences, limiting efforts at experiential control by promoting acceptance, identification of clear versus muddy emotions, values work) and seven forbidden strategies or components (e.g., emphasizing role of cognition in behavior, logic analysis, interpreting reflections focusing on psychodynamic themes, suggesting that primary goal of therapy is symptom reduction). The original checklist was translated into Swedish. Each of the allowed components was rated for frequency, from 0 (not at all) to 2

(addressed in detail) and skillfulness, from 0 (poorly) to 2 (skillful). All ACT treatment sessions were video-recorded and 20 % of sessions one through five were randomly selected for evaluation. Session six was overseen because it aimed at summing up and concluding therapy why we expected less demanding therapeutic interventions for this session.

For the WDI intervention, video-recording was not possible due to practical and ethical reasons. Meetings two and three took place in the workplace and in some cases, there were no room for a private meeting, making recording of the meeting impossible. Instead, study notes and participant charts for participants that received WDI were reviewed by a research assistant. An adherence checklist was created consisting of items corresponding to the different elements of the WDI. Adherence was rated as either 1 = fulfilled or 0 = not fulfilled and a mean score for each element was calculated.

3.2.6 Statistical analysis

Statistical analyses were performed with IBM SPSS Statistics Version 23. Power was established based on the original study on WDI (Karlson et al., 2010). It was estimated that for at power of .80, a sample size of at least 72 participants per group was required. Descriptive data and pre-measurement on outcome variables were evaluated with chi-square tests, fishers exact test and one-way ANOVA. Outcome analyses were performed according to the intent-to-treat (ITT) principle. For the primary outcome on net SA days, a generalized linear mixed model (GLMM) was fitted using a normal distribution variance structure with an identity link function. Self-assessed work ability and all secondary outcomes were analyzed with linear mixed-effects modeling (LMM) using the diagonal covariance structurer with heterogeneous variance. Time was set as a repeated measure. Final models were fitted with restricted maximum likelihood estimation. Within group ESs and between groups ESs were calculated for pre- to post measurement, and for post- to nine months follow-up. Further, clinical significance of the interventions was evaluated as suggested by Jacobson and Truax (1991).

However, the GLMM model fitted in the original analysis assumes a homogeneous residual variance for all (conditional) observations and that they are independent, thus we are assuming a normal distribution. The purpose of choosing GLMM instead of LMM was to adjust for the problem of residuals not being normally distributed. With an identity link, we were still assuming a normal distribution. This is also not theoretically appropriate since data does not fulfil the criterion of linear residuals. The gamma distribution which has been found useful in actuarial modeling (Antonio & Beirlant, 2007), is a flexible distribution and can be used when the target contains all positive, continuous values and is skewed towards the right. Therefore, a new GLMM model has been fitted for net SA days using a Gamma distribution with a log link function.

3.2.7 Results

A total of 352 participants were included in the study (ACT: 89, WDI: 87, ACT+WDI: 88, TAU: 88). There was a larger proportion of drop-out in the WDI group ($p < .001$) but there were no differences between completers and drop-outs for any of the sociodemographic variables or pre-treatment outcome variables. There were no significant differences on at pre-measurement between intervention groups.

In the analysis performed in study II, there were no significant difference in change over time between the groups from pre- to post-measurement. However, for the follow-up period there was a marginally significant interaction effect. Estimates showed a tendency towards participants in ACT+WDI having more net SA days compared with TAU. The new model with a gamma distribution improved model fit as indicated by the Akaike corrected information criterion. In this analysis, there were no differences between groups over time either for the treatment period or the follow-up period.

When the diagnostic group variable (depression, anxiety, or exhaustion) was added to the model with normal distribution and an identity link, there was no significant difference between groups. However, for the follow-up period there was a significant overall three-way interaction effect. Estimates revealed a tendency towards a significant difference indicating that participants with exhaustion disorder had less net SA days in the WDI group compared with TAU. When this analysis was rerun using the gamma distribution with a log link, there was instead a significant three-way interaction effect for the treatment period, $F(9,1220) = 2.523, p = .007$. Estimates revealed a significant difference in slope between WDI and TAU for participants with depression indicating that depressed participants had more SA days in the WDI group compared with TAU for this period. Further, there was a significant difference in slope between ACT+WDI and TAU for participants with exhaustion disorder indicating that participants with exhaustion disorder had more SA days in the ACT+WDI condition compared with TAU. There was no significant overall three-way interaction effect for the follow-up period.

For self-assessed work ability (WAI) participants in all groups improved in ratings over time but there was no difference in change over time between groups. For secondary outcomes, there were significant differences between groups over time from pre- to post-measurement for satisfaction with life, symptoms of exhaustion disorder, symptoms of depression, favoring mostly ACT and ACT+WDI. There were no significant differences between groups over time during the follow-up period. Further, there were no significant differences between groups in clinically significant change for self-assessed work ability (WAI), symptoms of exhaustion disorder (KEDS) or symptoms of anxiety or depression (HADS).

3.2.8 Discussion

All groups improved both from baseline to post-treatment and during the follow-up period but there were no differences between any of the intervention groups and TAU in change over time. This differs somewhat from the results previously presented in study II where there

was a marginally significant difference between groups and ACT+WDI had a slightly less favorable slope compared with TAU. For the moderator analysis, the original analysis showed a significant difference in slope for the follow-up period but not from baseline to post-treatment. The recent re-analysis shows a difference in slope during the treatment period between WDI and TAU for depressed patients. Based on these results, WDI is the less beneficial option for depressed patients whereas there now are no significant differences for patients with exhaustion disorder. This is in line with previous findings from Nieuwenhuijsen, Verbeek, de Boer, Blonk, and van Dijk (2004) which showed that better worker-supervisor communication predicted time to RTW for workers with mental health problems, except for depressed patients. The WDI protocol in this trial, aiming at improving worker-supervisor communication, may therefore not suit the needs of depressed patients. The longer treatment period that was discussed in study II as a explanation for more SA should therefore not be associated with outcome on SA generally but possibly for patients with exhaustion disorder.

The results from study II may be explained by a number of circumstances: First, the study sample consists of participants on SA up to 12 months. The relatively short interventions evaluated in this study may not meet the needs for participants with longer periods of SA. The hypothesis that ACT+WDI would improve outcomes was disproven. This may be due to the fact that ACT and WDI were performed as two separate processes with two therapists. If the two interventions were integrated, thus incorporating ACT processes such as personal values in relation to the workplace and committing to communication with the supervisor, the skill acquisition in the WDI might have been more effective. Further, differences in drop-out rates between the groups may have influenced the results since there were significantly more drop-outs in the WDI group. Also, there were more dropout in this group among patients with depression and anxiety disorders. Possibly, there are differences in credibility ratings between diagnostic groups which unfortunately, was not investigated.

3.3 STUDY III: ECONOMIC EVALUATION

3.3.1 Methods

This study is based on data collected in the SAFARI Stockholm RCT study as described above.

3.3.1.1 Economic evaluation

This study is a within trial comparative cost analysis followed by a cost-utility analysis. The analysis was undertaken both from a health care perspective and a limited societal perspective. The time horizon is one year which corresponds to the follow-up time in Study II. Costs were collected in 2012 prices, adjusted for inflation, and presented in 2014 US dollars (US\$).

3.3.1.2 Health outcomes

The effect outcome is health related quality of life (HRQoL) measured by the EuroQoL 5 dimensions (EQ-5D) instrument. The EQ-5D measures HRQoL in relation to five domains: mobility, self-care, usual activities, pain/discomfort, and anxiety/depression. The five items are rated on a scale with three levels: no problem, some problems, and major problems. An algorithm generates a summary score of HRQoL on a scale from 0 to 1 where 0 represents death and 1 full health. Negative values are possible representing a HRQoL worse than death. Based on the HRQoL index, QALYs are generated based on population-based index weights. More specifically, the outcome measure was QALYs gained per group. That is, the area representing the increase from pre-assessment following the linear increase in QALYs over the different assessment points. For the base case analysis, English utility weights (Dolan, 1997) were applied. Swedish utility weights (Burstrom et al., 2014) were applied in a sensitivity analysis in order to investigate the robustness of the cost-effectiveness results.

3.3.1.3 Identification, measurement and valuation of costs

Intervention costs were collected from a health care perspective and based on the number of participants that initiated treatment in each condition. Cost data was obtained from project documentation and included investment costs and operating costs. Investment cost included setting up treatment protocols and training therapists. Operating costs included therapist salaries and transportation costs. Health care costs represented costs referring to patient care, that is, costs for delivering the intervention and costs for other care received by the participant during the study period. The amount of SA reimbursement paid to each participant during the study period was obtained from the SIA.

3.3.1.4 Analysis strategy

The analysis included all participants in the trial irrespective of intervention uptake, using an intent-to-treat principle. Data from SIA was complete, but for health care utilization and effects on health-related quality of life (EQ-5D), there were missing data. Multiple imputation was employed to handle the missing data by creating 50 imputed datasets. Average cost and effect on HRQoL were calculated in 5000 bootstrapped subsamples for each of the 50 datasets, resulting in 250 000 values for each treatment group. Differences in cost and outcome between groups were calculated using Rubin's rule. Differences in monthly increase of HRQoL was calculated with latent growth modelling.

The cost utility analysis was performed by ranking the treatment options in ascending order of cost compared with a null comparator, assuming zero cost and effect. Incremental cost effectiveness ratios (ICERs) were calculated as proposed by Drummond et al. (2015). Results were presented graphically as cost-effectiveness acceptability curves and confidence intervals were presented on cost-effectiveness planes.

3.3.2 Results

The ACT+WDI group entailed the highest intervention cost per participant and ACT the lowest. WDI, although a shorter intervention, generated a higher cost than ACT due to cost for travel time since two of the meetings took place at participants work places. There were no significant differences between conditions for costs or HRQoL at pre-measurement or follow-up. Neither were there differences between groups in monthly increase in HRQoL.

For both perspectives, WDI and TAU were dominated and thus excluded from the analysis whereas ACT and ACT+WDI were dominant treatment alternatives generating higher effects and lower costs. However, ACT was deemed cost-effective compared to the Swedish willingness-to-pay (WTP) threshold only from the health care perspective. When costs for SA benefits were included in the analysis, no treatment alternative was cost-effective as compared with WTP. However, as illustrated by the uncertainty iterations spread over all four quadrants of the cost-effectiveness planes, the confidence intervals for the differences between groups were large.

3.3.3 Discussion

This was the first cost-effectiveness study on ACT and WDI for mental health disorders to our knowledge. Overall, there were small and non-significant differences between the treatment alternatives. ACT was found to be cost-effective in relation to the Swedish WTP per QALY gained of \$57,000 from a health care perspective. Compared with the “do nothing” alternative, the probability for ACT to be cost-effective was about 75 %. However, adding WDI to ACT was not a cost-effective treatment alternative from any of the perspectives. The CEAC showed that the probability of ACT+WDI to be cost-effective reached a maximum of 50%, regardless of the WTP. This implies that the alternatives can be equally favorable for decision-makers. From the limited societal perspective, including SA benefit costs, none of the alternatives was cost-effective. WDI as well as TAU were dominated due to higher costs and less effect on HRQoL from both the health care and the limited societal perspective. Sensitivity analyses further underlined the uncertainty in the results.

The strengths of this study included the RCT design with four treatment alternatives including TAU, the use of QALYs gained as effect measure, and a relatively large study sample and long time-horizon compared with other health economic evaluations in this field. Important limitations were the study sample that included only employed workers which limits the generalizability of the results. Also, despite a reasonable large study sample, the power analysis was not conducted for the purposes of a health economic evaluation. Due to cost data being skewed, larger study samples are needed.

3.4 STUDY IV: TWO-YEAR FOLLOW-UP

3.4.1 Methods

This study was a two-year follow-up of primary and secondary outcomes as well as of cost-effectiveness in the SAFARI Stockholm study. Of the original 352 participants in the SAFARI Stockholm study, 264 participants consented to participate in the two-year follow-up with register data being retrieved from the SIA. Eight more participants filled-in questionnaires but did not consent to data withdrawal from the SIA. Primary outcomes were net SA days and self-assessed work ability (WAI). Secondary outcomes were symptoms of anxiety and depression measured by HADS. Analysis were performed including data from pre-measurement to follow-up.

A follow-up cost-utility analysis was performed. Intervention costs were the same as in study III. Data on health care consumption was collected in questionnaires and total cost per participant for SA benefits was collected from SIA registers. Analyses were performed from a health care perspective and a limited societal perspective. The time horizon for this evaluation was two years, reflecting the period of 24 months following randomization.

Statistical analyses were conducted based on the intent-to-treat principle including all participants regardless of whether they had received the interventions or not. For the primary analysis of net SA days, a GLMM was fitted using a gamma distribution with a link log function. For work ability and secondary outcomes, random intercept linear mixed-effects models using diagonal covariance structure were fitted. Time was set as a repeated measure. Within and between effect sizes were calculated.

The cost-utility analysis was performed using the same strategy as described in study III. This time, data was analyzed using R statistical software, version 3.2.2 (R Core Team, 2015). The strategy for handling missing data was also the same as in study III.

3.4.2 Results

A total of 272 participants completed the two-year follow-up questionnaire and 264 of these consented to data on SA days being collected from SIA registers. There was no significant overall difference in average change over time between any of the intervention groups compared with TAU. When the moderator variable diagnostic group (depression, anxiety disorder, or exhaustion disorder) was added to the model, there was a significant two-way interaction effect (Time \times Diagnostic group) showing that patients with depression had a less favorable decrease in SA over time compared with exhaustion disorder. There was also a significant three-way interaction effect (Time \times Group \times Diagnostic group) indicating a difference between diagnostic groups in effect of treatment over time. Differences in slope between the intervention groups and TAU show that for depressed patients, WDI was a less beneficial treatment option.

The cost analysis showed that ACT was consistently the least expensive treatment option, however there were no statistically significant differences between groups. For the cost-

utility analysis, WDI and TAU were dominated when the treatment options were ranked in ascending order of cost, and therefore excluded from the analysis. ACT was a cost-effective treatment option from a health care perspective as compared to the established WTP threshold in Sweden. The ACT+WDI treatment alternative was not cost-effective from any perspective.

3.4.3 Discussion

Patients improved for all outcome measures over time but there were no significant differences between any of the intervention groups and TAU for the whole study period. There was a significant moderating effect of diagnostic group. For participants on SA due to depression at the time for inclusion, WDI was a less beneficial treatment option than TAU with regard to net SA days.

The cost-utility analysis confirmed the results from the one-year follow-up. ACT was again the less expensive treatment option, however, there were no significant differences in costs between groups. Adding WDI to ACT implied higher cost but only marginally better outcome in HRQoL and was not deemed cost-effective for any of the perspectives.

There are few previous long-term follow-ups of interventions aiming at RTW for patients on SA. Given that the difference between diagnostic groups emerged more clearly during the second follow-up year in this study, long-term follow-ups are essential when evaluating SA outcome.

3.5 ETHICAL CONSIDERATIONS AND PERMITS

For study I, a systematic review and meta-analysis, there were no ethical issues regarding the treatment of humans, informed consent, or confidentiality. However, there are other ethical issues to consider when conducting a research synthesis or meta-analysis. Brown and Hedges (2009) highlights the close relation between methodological rigor and ethical vigilance and identifies three points that are relevant when synthesizing data. First, the importance of methodological rigor when extracting, summarizing and integrating large amounts of data. Errors, whether on purpose or inadvertently, can imply miss-leading conclusions. Secondly, inclusion and exclusion criteria should be stated transparently and be applied uniformly to studies since there are ethical issues connected with the selection of studies for the synthesis. Third, the possibility of publication bias should be considered regarding the results of the meta-analysis. The measures taken to meet these criteria for the systematic review and meta-analysis are described in Study I.

The SAFARI Stockholm study was approved by the regional ethical review board in Stockholm (Dnr 2012/2109-31/5. Various ethical issues were discussed regarding the study procedure and further monitored during the course of the study.

Participants were approached with information about the study by post which was a procedure that per se had to be evaluated from an ethical point of view. A study

representative employed at the SIA office in Stockholm identified potential participants by registers and sent information about the study and an invitation to participate to those that fulfilled inclusion criteria. Hence, the envelope had the SIA logotype. This might have caused discomfort to some of the recipients since they were in the process of having applications for SA benefit approved. The decisions on SA benefits are sent from the SIA via post. Due to the significance of any decision from the SIA for the recipients' economic situation, we had to consider the potential discomfort caused by this procedure. This was further emphasized in the routine for reminders that were sent out to the insured as well as phone calls.

Those that returned a signed consent form were contacted by a research assistant for further screening. All participants received oral and written information about the randomized controlled trial and about the interventions that were included. Participants were informed that participation was voluntary, and that they could withdraw their participation at any time in line with recommendations of the Declaration of Helsinki Ethical Principles (World Medical Association, 2013). All participants signed two consent forms, one regarding the withdrawal of data from the SIA and one conventional study consent form including consent of video-taping of the ACT sessions.

The assessments included in the study were substantial and time-consuming for the participants. A compensation for this time was offered to all participants consisting of a gift voucher of 300 SEK when the pre-assessment questionnaire was filled in, another 300 SEK for the follow-up questionnaire twelve months after randomization, and a movie gift voucher of 99 SEK for the follow-up questionnaire at 24 months after randomization. Each participant was assigned a coded identification number at the time of randomization. This number was then utilized for administration during the study process. Special attention was given to this since the study was carried out outside regular care facilities and all procedures regarding care routines had to be invented and tailored to fit the special prerequisites for this trial and at the same time fulfill legislative demands. Data were handled confidentially and was assigned a second code for each participant in the database. All results were presented on group level and no single participant could be identified.

Potential maleficence from the two interventions was estimated beforehand and since both ACT and the WDI are established treatments that have been scientifically evaluated before, the risks for participants were estimated to be smaller compared to the potential benefits. However, the insufficient documentation of harm from psychological interventions has been recognized before (Duggan, Parry, McMurran, Davidson, & Dennis, 2014).

All in all, the potential risks of harm discussed above were considered to be out-weighted by the benefit and usefulness of the study results. However, ethical considerations were discussed throughout the execution of the RCT.

The SAFARI Stockholm study was partly funded by Rehabilitering och Samordning (Rehsam), a research program initiated by the Swedish government in 2009. The

Stockholm County Council were the recipient of these funds and also cofounded the project. Representatives from the Health care administration formed part of the research management group, along with representatives from Centre of Psychiatric Research and the researchers involved. The funding organizations had no role in the analysis in any of the studies presented in this thesis.

4 GENERAL DISCUSSION

The aim of this thesis was to increase knowledge about the effect of psychological treatments in RTW for patients on SA due to common mental disorders and musculoskeletal pain. The work described in this thesis includes a systematic review and meta-analysis and the results of an RCT consisting of outcomes on SA, level of functioning and psychiatric symptoms as well as an economic evaluation.

4.1 INTERPRETATION OF RESULTS

The findings show that there is a small but significant effect of psychological interventions on SA and RTW overall. This result is in line with other, similar reviews (Arends et al., 2012; Doki et al., 2014; Nigatu et al., 2016; Salomonsson et al., 2018). Thus, our findings support that psychological interventions might have an effect for patients on SA due to common mental disorders and musculoskeletal pain, however the small effect is not satisfactory. According to Cohen's recommendations of interpretation of effect sizes, the small effect sizes that are found may not be of clinical importance (Cohen, 1988). Although, due to the exceptionally high costs of SA, even small effects may be of economic importance on a societal level. Further, we found very little support for adding workplace interventions or tailoring intervention protocols to include RTW-relevant processes. Another review also showed limited evidence regarding the effectiveness of workplace interventions on SA (van Oostrom et al., 2009). There are indications that including the workplace and focusing on work is important (Blonk et al., 2006; van der Klink, Blonk, Schene, & van Dijk, 2003; van der Klink & van Dijk, 2003), however, there are no clear indications of how these processes can be incorporated in order to have an effect or for whom these processes may be beneficial. Results presented in this thesis indicate that for depressed patients, workplace interventions aiming at improving worker-supervisor communication may even imply adverse effects.

Study I included 30 RCTs evaluating different psychological interventions with regard to SA duration. No study was excluded due to low study quality resulting in methodological issues for the studies included. Generally, study quality was low which is a problem when evaluating the results. There is a great need for more well-designed intervention studies investigating suitable methods for helping patients RTW. In addition to conducting studies of higher methodological quality, there is a need to conduct studies that promote further development of RTW-interventions. This implies providing detailed description of treatment components and dose of components delivered.

The general understanding of the current evidence for effect of psychological interventions on SA and RTW is that, psychological interventions or psychotherapy is not sufficient to achieve a clinically relevant effect on these outcomes. The perception of a need for inclusion of other procedures such as inclusion of the work-place or RTW-processes is quite established (National Institute for Health and Care Excellence, 2009). However, the low number of trials available, the variation in measures, and low ratings of methodological

quality still leaves room for improvement. Gold standard evidence-based treatments for depression and anxiety are assessed in studies of considerably higher methodological quality (Butler et al., 2006). This is also supported by the finding in study I that higher methodological quality was associated with higher ESs. Few studies on evidence-based psychotherapy include measures on SA or RTW which implies that the results from this systematic review and meta-analysis, as well as other ones, cannot be generalized to the effect of psychological treatments overall. Further, it is most possible that evidence-based treatments also directed towards symptom reduction only, might have an effect on SA. However, this effect is probably of preventive nature for patients at risk for SA or for patients with shorter periods of SA. This should be further explored in future psychotherapy trials also not directly aiming at RTW by including SA data in descriptive variables and as an outcome measure. At least in Sweden, this is a relatively easy task thanks to the availability of high-quality register data via the SIA. Thus, the effect of psychological treatment on SA is still to be determined, at least in terms of prevention. In summary, although much points in the direction of traditional psychological treatment and psychotherapy alone not being effective in improving RTW, there is still no high-quality evidence that finally establishes that.

One of the extensively discussed implications of certified SA is the associated societal cost. Resources for health care are scarce and considering the enormous costs associated with common mental disorders at different levels in society, it is important for decision makers to have information on the relative efficiency of interventions to allocate available resources where they are of best use. Therefore, it is critical that high-quality economic evaluations are performed. This requires close collaboration between health specialists with expertise in occupational health, the researchers executing the trial and health economists. There are several considerations that are of outmost importance for a high-quality economic evaluation. Some of these concerns perspective taken, analytic time-horizon, identification, measurement and valuation of costs and outcomes associated with the intervention, as well as the methods used for calculating sample size, comparing costs and consequences and handling missing data and uncertainty (van Dongen et al., 2014). This current trial handles some of these considerations properly, e.g. the handling of missing data and reporting on uncertainty. Weak points concern the number of participants included and the time-horizon adapted which might not include all relevant costs. Further, when interpreting outcomes from economic evaluations from other countries, one must have in mind that results may not be applicable internationally due to differences in health care, legislation regarding social security systems, and other factors. Therefore, it is of outmost importance to provide extensive information on the intervention, a detailed list of resource use and information of the health care system,

4.2 CLINICAL IMPLICATIONS

The hypothesis for the RCT that was conducted was that ACT would primarily have an effect on symptoms, that WDI would have an effect on SA and that the combination of

ACT and WDI would have a positive effect on both symptoms and SA. All intervention groups were compared to TAU and noteworthy, all groups improved over time on all outcome measurements, both between pre- and post-measurements and during the follow-up period. There were few differences between groups which suggests that time can explain the decrease in symptoms and SA days. However, there were some differences in favor of ACT from pre- to post-measurements. ACT was also the least costly intervention regardless of perspective in the economic evaluation and participants rated the ACT intervention higher with regard to treatment satisfaction. Functional contextualism, the theoretical foundation of ACT, with its aim of improving on function and quality of life rather than alleviating symptoms seems to fit well with the needs of the RTW process. Increased psychological flexibility and broader behavior repertoires might be an important skill for handling the challenges of work-life and other strenuous circumstances in life. Previous findings show that work-related psychological flexibility may be of importance for work-specific processes (Bond, Lloyd, & Guenole, 2013; Ruiz & Odriozola-Gonzalez, 2014; Xu, Liu, Ou, Xie, & Chen, 2018), however, more research is needed in order to examine its importance in relation to RTW processes.

In a contemporaneous study, the Work-up study (Post Sennehed, 2018), WDI was evaluated for patients in primary care in an early stage of neck and back pain. Participants were at risk for SA or had no more than 60 days of SA at the time for inclusion. The results showed that significantly more participants in the intervention group had work ability at one-year follow-up operationalized as number of SA days and no disability pension for four consecutive weeks. There were some interesting differences between the WDI protocol in the Work-up study and the protocol used in the SAFARI Stockholm study. For example, in the Work-up study the physiotherapist attending the patients also conducted the WDI intervention and the meetings took place at the primary care center. Interviews with the employer were also conducted over phone if needed. This allows for a more natural introduction of the work-place intervention within the normal course of treatment compared with how WDI was introduced in the SAFARI study. Possibly, an already established alliance with the patient facilitates the introduction of the work-place intervention. In the SAFARI study, two different therapists conducted ACT and WDI, respectively. Noteworthy in the Work-up study there seems to have been less problems with drop-out compared with the SAFARI study, however, participants in the Work-up study were randomized on a cluster level, thus were never informed of other treatment options. The participants in the SAFARI study were informed of the content of the four conditions and there were also follow-up meetings between the patient and the physiotherapist at three, six, and twelve months after the first meeting in the Work-up study. The lack of follow-up meetings is probably an important weak point in the WDI protocol for SAFARI Stockholm, which was also brought up by the participants. Another important difference is the measurement process and the statistical procedures employed. There is a significant difference between following the average change in SA days during the study follow-up period and comparing groups by incidence at follow-up measurement points. The

comparison between these two studies further highlights the need for more knowledge on mechanisms of change that are relevant for the RTW process.

The results from the SAFARI-study showed that WDI, previously tested for patients with burnout and musculoskeletal pain, did not improve RTW compared with TAU for patients with common mental disorders. However, there are important differences in design, population, measurements, and statistical procedures of the studies that complicates comparison between studies. Moderating analyses suggests that this specific work-place intervention might not be of benefit for depressed patients on SA, however, this needs to be further explored due to methodological limitations including drop-out.

4.3 METHODOLOGICAL CONSIDERATIONS AND LIMITATIONS TO THE FINDINGS

Research on RTW and SA patterns is carried out from various scientific disciplines, e.g. behavioral science, economics, law, medical science, psychology, and sociology. The model representing the stake-holders involved in the RTW process presented by Loisel and Anema (2013) high-lights the complexity of this process as well as the many perspectives that can be taken on this process. This mixture of scientific disciplines and the implications of it were made visible during the process of extracting data and evaluating methodological rigor for the purposes of the systematic review and meta-analysis. Differences between scientific fields in practice regarding design, measurement procedures, and reporting on results were evident and complicated the extraction of data and evaluation of methodology across studies. Coming from the discipline of clinical psychology, the lack of checks of adherence to treatment protocols and therapist competence was striking. Also, statistical procedures with reports on odds ratios and proportion of outcomes instead of linear models of changes over time suggested differences in methods and procedures in reporting on clinical interventions.

Somewhat unexpectedly, taking in consideration the complexity of the RTW process discussed above, most interventions that were included in the review and meta-analysis presented within this thesis are of relatively simple and short format. The same goes for the interventions that were evaluated in the SAFARI Stockholm study. The idea of sticking to simple principles when going at a large and complex problem is in no way a bad idea. However, in order to meet the needs of the complexity discussed here, there needs to be a solid theoretical foundation for what principles should guide this process. There is a general lack of consensus of what these principles should be in this field, as well as in the design of the RCT presented in this thesis. Overall, combining psychotherapy with a workplace intervention for people on SA due to common mental disorders is a solid idea which might be defended from a foundation of guidelines and earlier research. However, combining two interventions stemming from completely different theoretical backgrounds may not be as easily defended. As discussed elsewhere in this thesis, a more thorough integration of ACT-principles and the WDI intervention might have resulted in a more beneficial outcome.

Overall, as noted in study I and other systematic reviews, there is a need of methodological rigor when evaluating interventions and reporting on trials. Consensus around process and outcome data is needed in order to pool data. How to measure and evaluate SA and RTW in order to be able to properly assess outcome and compare outcomes between studies is one of the most crucial aspects of methodological development that needs to take place in this field. The variation of measurements for this outcome is illustrated in the systematic review and meta-analysis included in this thesis.

Due to the complexity of the RTW process there is no single outcome measure that can capture all dimensions of this concept. As a consequence, there are a multitude of measurements being used (Biering, Hjollund, & Lund, 2013; Borg, Goine, Soderberg, Marnetoft, & Alexanderson, 2006; Hensing, 2009; Hensing & Wahlstrom, 2004). Further, there are different names or descriptions for outcomes that essentially measures the same thing which further contributes to confusion. For example, in study I presented in this thesis different names for dichotomous RTW measures included partial RTW, no sick leave, full RTW, any RTW, first RTW, lasting RTW, RTW conservative measure, RTW liberal measure etc.

The Swedish SIA has proposed a measurement strategy (Försäkringskassan [Swedish Social Insurance Agency], 2016) consisting of four different types of measurements based on register data: (1) Frequencies consisting of number of individuals in a group with full- or part-time RTW, or, number of sick-leave spells (per month); (2) Proportions of a group with full- or part-time RTW; (3) Days with sickness cash benefit reported as means and medians of number of gross and net days during the follow-up period; (4) New sick-leave spells regarding current diagnosis and the total for all diagnoses. This measurement includes number of days at work before a new sick-leave spell >14 days is started, assessment of durable, stable RTW (>28 days), number of new SA spells, and duration of new SA spells per person. However, these measurements are applicable only to individuals with a strong connection to the labor market. For other groups such as unemployed and students, information on income, student grants, pensions, and unemployment benefits are important to be able to properly examine effects. Further, relying on register data from the SIA or insurance companies implies a risk to miss those individuals that are not benefiting from insurances but are relying on a partner or other voluntary efforts for subsistence. This latter circumstance may be of extra importance when long-term sickness absence is examined.

More knowledge on which interventions or which mechanisms of change that can facilitate RTW for specific groups of patients on SA is of great value for the individual, worker, employers, and from a societal perspective. This can be easier achieved with a consensus on measurements for outcomes and processes of RTW.

Another measurement closely related to SA measures is work ability. Work ability has proven to be a complex construct and difficult to measure. The Work ability index (WAI) used in this project is one of two instruments that have been recommended (Amler, Felder,

Mau, Merkesdal, & Schoffski, 2018) for assessment of work ability, however, as concluded by Amler et al (2018), there is currently no instrument that could be recommended without reservation for the stated purpose.

For the cost-utility analysis, there are both strengths and weaknesses. On the plus side are factors such a collaboration between trialists and health economists starting at the planning stage of the trial. This allowed us to plan for adequate measuring of costs and effect. Other strengths are the handling of missing data and reporting on uncertainty with cost-effectiveness planes and cost-utility acceptability curves. Nevertheless, the SAFARI study does not include a full economic evaluation and have a limited costing perspective, comprising only direct intervention costs. There are other opportunity costs not included such as participants time and employers time. There was no data on productivity loss due to presenteeism assuming that participants are 100% effective when at work. As presenteeism seems to be an important contributor to productivity loss among workers with mental health problems, this is an important variable to include in economic evaluations. This may represent an underestimation of productivity loss in the present study.

4.4 FUTURE RESEARCH

There are large differences between different countries on prevalence for SA. Sweden, despite having one of the highest welfare levels and best working conditions in the world, also have among the highest prevalence figures for SA. Certifying sickness absence is a common intervention in Swedish health care, however, there is no clear evidence-based practice for how it should be best implemented for the largest patient groups receiving sickness benefits. As has been discussed in this thesis, long-term SA may have serious negative effects for the individual and implies high costs to society. Further, some advert the risk that having a generous social benefit system leads to less incitements to work and that some people might prefer to be on benefits. There are different opinions on this and it is to a great extent a political discussion. Some are in favor of cutting benefits and forcing people back to work. Others thinks that society should act as a safety net for those that for some reason are incapable of work due to illness. I believe that none of these perspectives are free of challenges and risk of doing harm. Lack of social safety nets may force people into unemployment and social benefit systems. Over-using benefits on the other hand implies the risk of isolating people from important social arenas and sense of self-sufficiency. To date, there is not enough knowledge of best practice in certifying SA in order to maximize positive outcome for the individual and society. The lack of high-quality research in this research field further undermines an informed discussion on this matter.

Therefore, further research in this field is of outmost importance, especially since the world is facing the challenge of increasing prevalence of common mental disorders. Research and practice has to catch up in order for societies to be able to provide effective and evidence-based management and treatment for patients on SA and control costs. The most substantial possibility for impact is probably in the prevention of SA. First, a lot can be done by organizations, companies and employers to create healthy workplaces in order to boost

workers mental health and prevent SA. Further, screening and follow-up of employees' mental health can help employers identify and target persons at risk. However, according to the experiences gained from the WDI intervention in this thesis, there is a great lack of knowledge regarding mental health disorders among employers and what they need to do in order to meet the needs of employees and prevent SA. Second, these patients are generally found in primary care where the current aim is to identify and treat symptoms of ill-health. SA certification has traditionally been used to alleviate the patient from pain and symptoms and little attention has been given to consequences and side-effects from poorly implemented SA subscription. There are many areas with bearing on the management of SA that has a lack of methodology that have the potential to greater impact SA. Some examples are, identification and diagnostic procedures of common mental disorders and especially stress-related conditions, increasing availability to evidence-based treatment of common mental disorders, educating and supporting medical doctors in the prescription and follow-up of SA, and developing methods for collaboration and coordination of interventions with employers that can be implemented in primary care. Methods needs to be developed and customized.

Another important point to develop is to distinguish between different subgroups that may have different needs related to the SA and RTW process. For example, there are differences between prevention of SA and treating patients already on SA and between patients with less exposure to SA and patients on long-term SA. Another difference is between patients that have an employment and those that are job seekers. Further, there is probably a difference regarding cause of SA. If SA is primarily caused by work conditions, interventions should focus on these and should be implemented by personnel with expertise in this field. In other cases, the cause of SA might be multifactorial and more extensive support might be necessary. All this implies the need of methods for identification of and distinction between different subgroups. To my knowledge, there is no such instrument at the time.

Qualitative investigations of patients' experiences related to successful as well as unsuccessful treatment and RTW intents can shed light on mechanisms of change and if theoretical assumptions holds true. Qualitative methodology can be of significant importance in the development of successful RTW interventions due to the lack of knowledge on mechanisms of change in this field. There are numerous examples of RCTs with procedures and protocols not holding up to expected outcomes. Single-case studies and feasibility studies demand less resources and can shed light on what are important mechanisms for the RTW-process that can later be tested in full-scale RCTs. This could advance clinical routines and research questions, and information could be gained about possible improvements to interventions for particular subgroups of patients, patient satisfaction, and adverse treatment events.

Following up on cost-effectiveness of RTW-interventions is inevitably a very important question due to the substantial costs of SA in itself and of consequential costs. Research on cost-effectiveness regarding RTW-interventions are still in its early stages and it has been claimed that health economic evaluations are not of relevance if the intervention is not proven

to be successful. A particular challenge for these trials is the need of large study samples due to the large confidence intervals commonly associated with cost data.

Finally, as previously discussed, there is a need of further development and evaluation of theory in order to customize interventions. Further studies on the SAFARI Stockholm cohort include exploration of differences between groups in process measurements. Data was collected on RTW-related self-efficacy and psychological flexibility in relation to work. Further, interviews with participants from the intervention groups (ACT, WDI, and ACT+WDI) was conducted by one-year follow-up regarding their perceptions on the RTW process and the intervention they took part of. Together, we hope that this will contribute to more understanding of the RTW process and generate new hypotheses on mechanisms of change.

5 CONCLUSIONS

Common mental disorders including depression, anxiety disorders and exhaustion disorder and musculoskeletal pain are highly prevalent health problems causing suffering to the individual as well as high cost for society. Evidence-based psychological treatments such as CBT is effective for treating symptoms of common mental disorders but the effect on SA duration and RTW is unsatisfactory. Generally, study quality was low which introduces further doubt in the interpretation of the results. There is a great need for further development of return to work interventions and more well-designed intervention trials. There were overall few differences between ACT, WDI, and ACT+WDI compared with TAU in the trial evaluated within this thesis. Effects in terms of cost-effectiveness were also small, probably due to lack of treatment effects. There are many areas in need of further development and evaluation in sickness absence research. Interventions needs to be more specific in terms of theory, mechanisms of change and tailored to maximize effects for different subgroups.

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